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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/007,257	11/13/2001	Barry Douglas Moore	31749/241015	8521

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EXAMINER
TRAN, SUSAN T

ART UNIT	PAPER NUMBER
1615	

DATE MAILED: 11/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/007,257	MOORE ET AL.	
	Examiner	Art Unit	
	Susan T. Tran	1615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 August 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6-9,11-28 and 30-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4, 6-9, 11-28 and 30-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Receipt is acknowledged of applicant's Declaration, Amendment, and Request for Extension of Time filed 08/23/04.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 6-8, 10-12, 22, 24, 25, and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Randen et al. J. Pharm. Pharmacol (XP-000973058).

Randen teaches method of coprecipitation of enzymes with water-soluble starch. The method comprises preparing an aqueous solution of enzymes (krill protease) and water-soluble starch; mixing the aqueous solution with organic solvent, such as ethanol, acetone, or iosopropanol to cause rapid precipitation; collecting the precipitate; drying the precipitate; and milling the dried precipitate to obtain micronized particle (pages 763-766).

Claims 1-5, 24-28, 30 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Capone GB 2 131 948 A.

Capone discloses a particle-containing composition comprising particulate material having diameter from about 2 to about 9 μm coated with protein materials

(page 1, columns 1-2). The particulate material can be selected from zymosan (yeast cell walls), polysaccharide, and polymeric beads (page 1, column 2).

It is noted that Capone does not teach the molecular weight of the coprecipitant unit in Da. However, it is the position of the examiner that the molecular weight is inherent because Capone teaches the use of the same coprecipitant for the purpose, suitable protein or mixture of proteins useful to coat particulate material, *e.g.*, polysaccharide particles.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-12, 20-25, 27, and 32-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Randen et al.

Randen is relied upon for the reason stated above. The reference is silent as to the teaching of particle having size of less than 50 μm. However, Randen teaches the irregular shape particles or precipitate is further micronized by milling or grinding to obtain a more uniform particle size distribution (pages 763-764). Thus, it would have been *prima facie* obvious for one of ordinary skill in the art to, by routine experimentation obtain particle having size of less than 50 μm, because the reference

teaches micronized, milling, or grinding the particle to obtain a desirable microparticle size.

Claims 1-12, 20-28 and 30-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Capone.

Capone is relied upon for the reason stated above. The process is taught in the examples. Capone does not teach rapidly mixing the biological macromolecule and coprecipitant. However, Capone teaches mixing the two ingredients to form suspension/crystalline, and the results particles were wash and isolated (see examples). Thus, it would have been obvious for one of ordinary skill in the art to, by routine experimentation optimize the mixing step in the method taught by Capone with the expectation to coat protein onto the particulate material to obtain protein coated particle having diameter in micron size useful in pharmaceutical/medicine art.

Claims 22 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Novo WO 97/34919.

Novo teaches method for purification of a protein from protein containing solution. The method comprises crystallizing protein from protein solution with water-miscible organic solvent, and isolating after crystallization (pages 17-18). It is the position of the examiner that it would have been obvious for one of ordinary skill in this art to modify Novo's method with the expectation of at least similar result, because

Novo teaches similar method using same materials to obtain useful crystalline protein product.

Claims 1-5, 13-21, 23, 26-28 and 30-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hawkins et al. US 5,198,353, and Langley et al. EP 0 356 239.

Hawkins teaches method for preparing stabilized enzyme dispersion comprising coprecipitating enzyme and polymer in aqueous solution, mixing the enzyme and polymer solution with organic solvent, obtaining the precipitant (columns 3-6, and examples). The polymer being used can be selected from polymer having molecular weight of from 1,000 Da (column 2).

Hawkins is silent as to the teaching of particle size of less than 50 μm.

Langley teaches process for preparing stable dispersion of small particles comprising dispersion of enzyme and polymer in liquid solution and precipitated with a solvent phase to obtain particle having size of below 20 μm (columns 2-7, and claims). Thus, it would have been obvious for one of ordinary skill in the art to modify Hawkins's process with the teachings of Langley to obtain particle having size of less than 20 μm, because the references teach the advantageous results of enzyme dispersion process.

Response to Arguments

Applicant's arguments filed 08/23/04 have been fully considered but they are not persuasive. The examiner maintains the original rejections.

The Declaration under 37 CFR 1.132 filed 08/23/04 has been fully considered but is insufficient to overcome the rejection of claims 1-28 and 30-41 based upon the 102(b) and 103(a) rejections as set forth in the last Office action because: difference in shape is not patentable distinct. Paragraph 6 of the Declaration states that "the amorphous structure is not consistent with the existence of a coprecipitant core coated with biological molecules. In contrast, particles made with materials such as amino-acids according to the claimed invention provide sharp DSC melting points that demonstrate high crystallinity. Neither, melting point nor crystalline shape of the particle is being claimed. Furthermore, the statement in paragraph 6 concludes that the starch-based particles produced by the Randen method and the method of the claimed invention are approximately ***the same***. When the claimed and prior art products are identical or substantially identical in structure or composition, or are ***produced by identical or substantially identical processes***, a *prima facie* case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977).

In response to applicant's argument that the claimed particles have the biological macromolecule in the core, while the biological material of the cited reference is intermingled with the coprecipitant. The examiner has not been able to determine the criticality between the coated core of the claimed invention and that of Randen. The burden is shifted to applicant to provide data establishing detrimental effect of the biological macromolecule intermingled with the coprecipitant of the prior art.

Claims 6-8, 10-12, 22, 24, 25, and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Randen et al. J. Pharm. Pharmacol (XP-000973058).

Applicant recites the teachings of Randen in page 765 to allege that Randen does not teach or suggest the use of low molecular weight polymer co-precipitants, such as low molecular weight polymers less than 10,000 Da as recited in claims 5, 10, 24, 25, 28, and 29. However, according to the above 112, 1st paragraph rejection, it appears that the molecular weight is referring to a particular coprecipitant. Contrary to the applicant's argument, the low molecular weight polymers in claims 5, 10, 24, and 25 are recited in a Markush group by the use of the phrase "selected from the group", and therefore, the limitations are interpreted in an alternative manner, *e.g.*, a, b, or c, NOT a, b, *and* c. In response to applicant's argument that the reference does not show certain features of applicant's invention, it is noted that claims 28 and 29 are not rejected under the 102(b) rejection.

Claims 1-12, 20-25, 27, and 32-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Randen et al.

Applicant argues that the use of non-polymeric materials is contrary to the teachings of the art. In contrast, the art suggests that a polymer co-precipitant is required to stabilize the protein by entrapping it within a polymer matrix. Contrary to the applicant's argument, the transitional phrase "comprising of" in the generic claims does not exclude the use of polymeric materials. The transitional term "comprising", which is synonymous with "including," "containing," or "characterized by," is inclusive or open-

ended and does not exclude additional, un-recited elements or method steps. See, *e.g.*, Genentech, Inc. v. Chiron Corp., 112 F.3d 495, 501, 42 USPQ2d 1608, 1613 (Fed. Cir. 1997). Even using a "consisting essentially of" transitional phrase, but absent a clear indication in the specification or claims of what the basic and novel characteristics actually are, "consisting essentially of" will be construed as equivalent to "comprising." See, *e.g.*, PPG, 156 F.3d at 1355, 48 USPQ2d at 1355 ("PPG could have defined the scope of the phrase 'consisting essentially of' for purposes of its patent by making clear in its specification what it regarded as constituting a material change in the basic and novel characteristics of the invention."). Applicant's specification, claims, as well as applicant's remark, include the use of polymeric materials, *e.g.*, polymers, zwitterionic compounds, dendrimers, or remarks page 1 "one skilled in the art would recognize that *several* of the noted co-precipitants are not polymeric materials. Thus, applicant's invention does not exclude the use of polymer materials.

Applicant argues that Randen is directed specifically to the formation of starch-based particles. Nowhere in Randen suggests that other materials may be used for co-precipitation. Contrary to the applicant's argument, applicants' claims do not exclude the use of starch, nor require the use of other material as a sole material for the co-precipitation.

Claims 22 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Novo WO 97/34919.

Applicant argues that the Novo publication is directed to a different process to produce a different product than that claimed. The Novo results in protein crystals and the claimed invention is a particle with a co-precipitant core coated with a protein. Contrary to the applicant's argument, Novo publication discloses crystalline protein containing solution in fermentation broth containing *besides* protein, other substance, such as carbohydrates, salts, cells, nucleic acids (page 3). Thus, it is the position of the examiner that the crystalline protein of Novo could contain carbohydrates, salts, cells, nucleic acids (co-precipitant).

Claims 1-5, 13-21, 23, 26-28 and 30-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hawkins et al. US 5,198,353, and Langley et al. EP 0 356 239.

Applicant argues that there is no motivation to combine the references, because Hawkins is directed to the production of particles which are initially produced with the protein in a hydrated state; the process used in Langley relates to an emulsification step that requires an amphipathic polymeric stabilizer. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). It is also noted that the test for obviousness is not whether the features of a

secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this case, Langley is relied upon solely for the teaching of particulate protein having particle size of less than 50 μm.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susan T. Tran whose telephone number is (571) 272-0606. The examiner can normally be reached on M-R from 6:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thurman K. Page, can be reached at (571) 272-0602. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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